

**IN THE CLAIMS:**

**Please cancel Claims 29-44 without prejudice.**

**Please amend claim 1 as follows:**

*but p1*  
1. (Once amended) A vertical cavity surface emitting laser (VCSEL),  
comprising:

*A3*  
an active region further comprising at least one quantum well having a well  
depth of at least 40 meV and comprised of InGaAsSb and barrier layers  
sandwiching said at least one quantum well; and  
confinement layers sandwiching said active region.

**Un-amended Claims 2-28 remain in the application as follows:**

2. (Not amended) The VCSEL of claim 1 wherein said barrier layers are  
comprised of GaAsN.

3. (Not amended) The VCSEL of claim 1 wherein said barrier layers are  
comprised of GaAsP.

4. (Not amended) The VCSEL of claim 1 wherein said barrier layers are  
comprised of AlGaAs.

5. (Not amended) The VCSEL of claim 1 wherein said confinement layers  
are comprised of AlGaAs.

6. (*Not amended*) The VCSEL of claim 1 wherein said quantum well is up to and including 50Å in thickness.

7. (*Not amended*) The VCSEL of claim 2 wherein said confinement layers are comprised of AlGaAs.

8. (*Not amended*) The VCSEL of claim 7 wherein said quantum well is up to and including 50Å in thickness.

9. (*Not amended*) The VCSEL of claim 3 wherein said confinement layers are comprised of AlGaAs.

10. (*Not amended*) The VCSEL of claim 9 wherein said quantum well is up to and including 50Å in thickness.

11. (*Not amended*) The VCSEL of claim 4 wherein said confinement layers are comprised of AlGaAs.

12. (*Not amended*) The VCSEL of claim 11 wherein said quantum well is up to and including 50Å in thickness.

13. (*Not amended*) The VCSEL of claim 1 wherein said at least one quantum well further comprises >1% N.

14. (*Not amended*) The VCSEL of claim 13 wherein said quantum well is up to and including 50Å in thickness.

15. (*Not amended*) The VCSEL of claim 13 wherein said barrier layers are comprised of GaAsN.

16. (*Not amended*) The VCSEL of claim 15 wherein said quantum well is up to and including 50Å in thickness.

17. (*Not amended*) The VCSEL of claim 13 wherein said barrier layers are comprised of GaAsP

18. (*Not amended*) The VCSEL of claim 17 wherein said quantum well is up to and including 50Å in thickness.

19. (*Not amended*) The VCSEL of claim 13 wherein said barrier layers are comprised of AlGaAs.

20. (*Not amended*) The VCSEL of claim 19 wherein said quantum well is up to and including 50Å in thickness.

21. (*Not amended*) The VCSEL of claim 13 wherein said confinement layers are comprised of AlGaAs.

22. (*Not amended*) The VCSEL of claim 21 wherein said quantum well is up to and including 50Å in thickness.

23. (*Not amended*) The VCSEL of claim 15 wherein said confinement layers are comprised of AlGaAs.

24. (*Not amended*) The VCSEL of claim 23 wherein said quantum well is up to and including 50Å in thickness.

25. (*Not amended*) The VCSEL of claim 17 wherein said confinement layers are comprised of AlGaAs.

26. (Not amended) The VCSEL of claim 25 wherein said quantum well is up to and including 50Å in thickness.

27. (Not amended) The VCSEL of claim 19 wherein said confinement layers are comprised of AlGaAs.

28. (Not amended) The VCSEL of claim 27 wherein said quantum well is up to and including 50Å in thickness.

Please the following new claims, 45-59:

b1  
45. (New) A vertical cavity surface emitting laser (VCSEL), comprising:  
an active region further comprising at least one quantum comprised of material including InGaAsSb and greater than 1% nitrogen, said at least one quantum well having a well depth of at least 40 meV, and barrier layers sandwiching said at least one quantum well; and

confinement layers sandwiching said active region.

46. (New) The VCSEL of claim 45 wherein said barrier layers are comprised of GaAsN.

47. (New) The VCSEL of claim 45 wherein said barrier layers are comprised of GaAs and at least one of P and Al.

48. (New) The VCSEL of claim 45 wherein said confinement layers are comprised of AlGaAs.

49. (New) The VCSEL of claim 46 wherein said confinement layers are comprised of AlGaAs.

50. (New) The VCSEL of claim 47 wherein said confinement layers are comprised of AlGaAs.

51. (New) The VCSEL of claim 48 wherein said barrier layers are comprised of GaAsN.

52. (New) The VCSEL of claim 48 wherein said barrier layers are comprised of GaAs and at least one of P and Al.

53. (New) A vertical cavity surface emitting laser (VCSEL), comprising:  
an active region further comprising at least one quantum comprised of material including InGaAsSb and greater than 1% nitrogen, said at least one quantum well having a well depth of at least 40 meV and a thickness up to and including 50Å, and barrier layers sandwiching said at least one quantum well; and  
confinement layers sandwiching said active region.

54. (New) The VCSEL of claim 53 wherein said barrier layers are comprised of GaAsN.

55. (New) The VCSEL of claim 53 wherein said barrier layers are comprised of GaAs and at least one of P and Al.

56. (New) The VCSEL of claim 53 wherein said confinement layers are comprised of AlGaAs.

57. (New) The VCSEL of claim 54 wherein said confinement layers are comprised of AlGaAs.

58. (New) The VCSEL of claim 55 wherein said confinement layers are comprised of AlGaAs.

59. (New) The VCSEL of claim 56 wherein said barrier layers are comprised of GaAs and at least one of N, P and Al.

### REMARKS

In further support of the claims presented, Applicant submits the following remarks.

#### **I. Prosecution History and Current Status of Claims**

According to the Office Action, Claims 1-44 were originally presented for examination; however, Applicants file only indicates that 43 claims, one independent, were filed. Applicant will assume a count of 44, but has cancelled claims 29-44 herein.

In the first Office Action: Claims 1-44 stand provisionally rejected under the judicially created doctrine of double patenting over claims in Application Nos. 10/026,044, 10/026,055, and 10/026,016. Claim 1-44 also stand rejected under 35 U.S.C. § 112, second paragraph for being indefinite. Claims 1 stands rejected under 35 U.S.C. § 102 as being anticipated by Eglash et al (5,251,255). Claims 2 and 7-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Eglash et al (5,251,255) in view of Spruytte et al (US2002/0075920). Claims 5-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Eglash et al (5,251,255)